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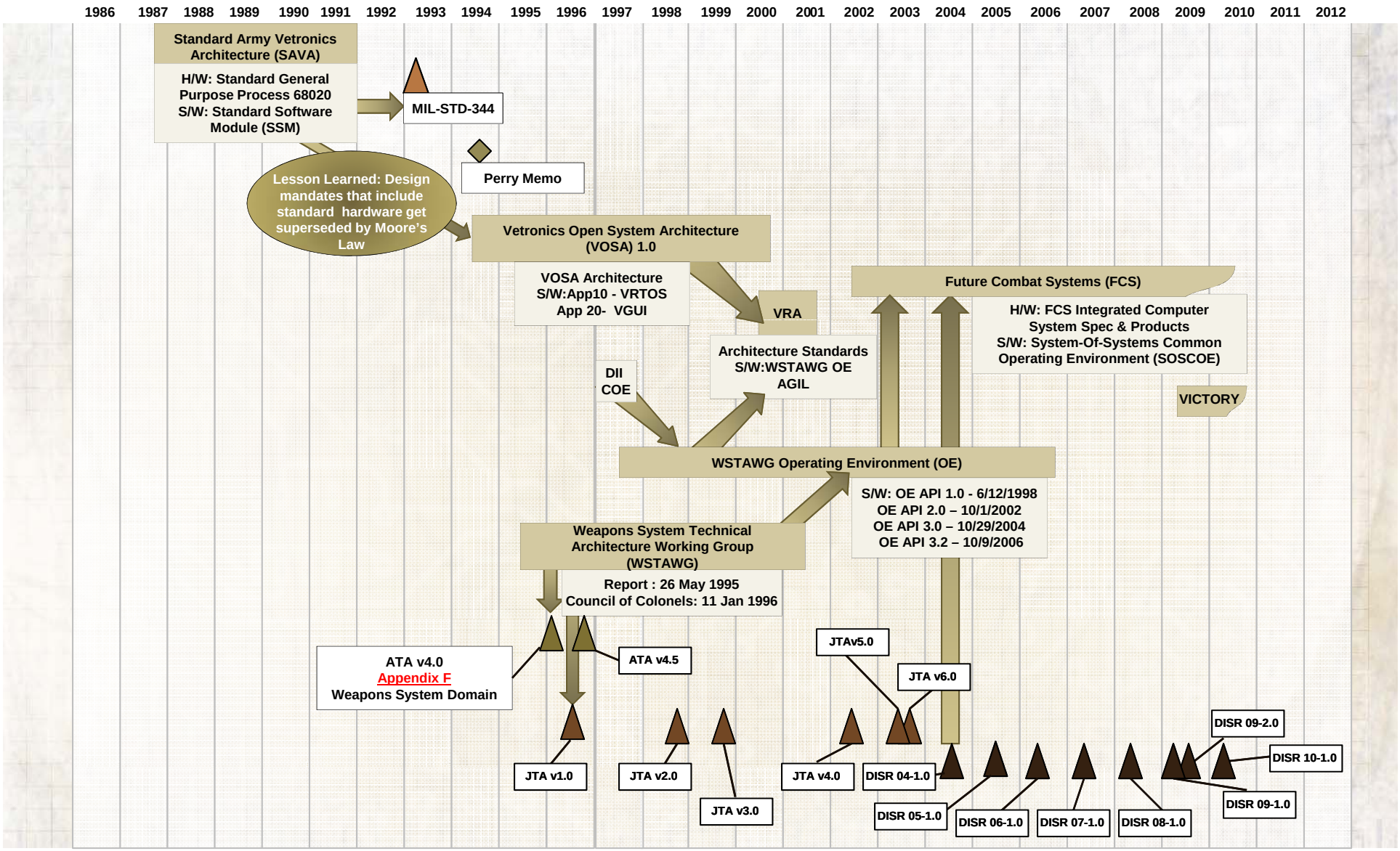
History of Past Architecture Efforts



Legend:

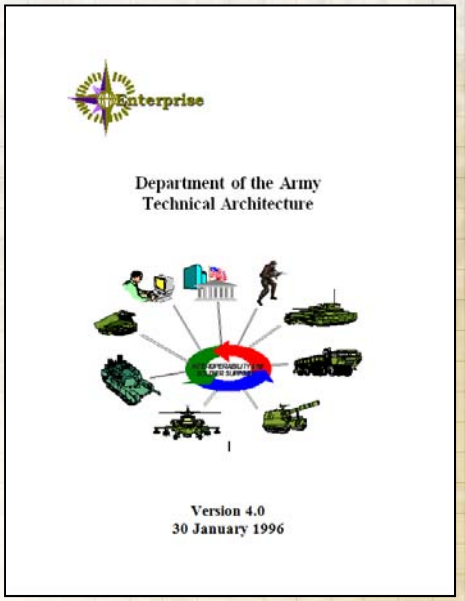
- Military Standards (MIL STD)
- -Army Technical Architecture (ATA)
- Joint Technical Architecture (JTA)
- DoD Information Technology Standard (DISR) published by Defense Information Systems Agency (DISA)

Defense Information Infrastructure Common Operating Environment (DII COE)

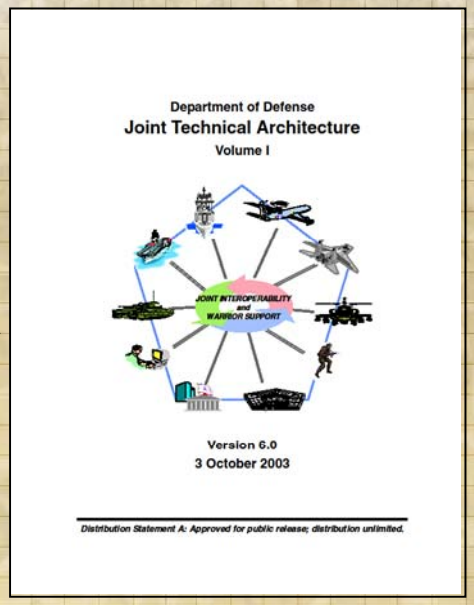
Vetronics Reference Architecture (VRA)

Hardware (HW)
Software (SW)

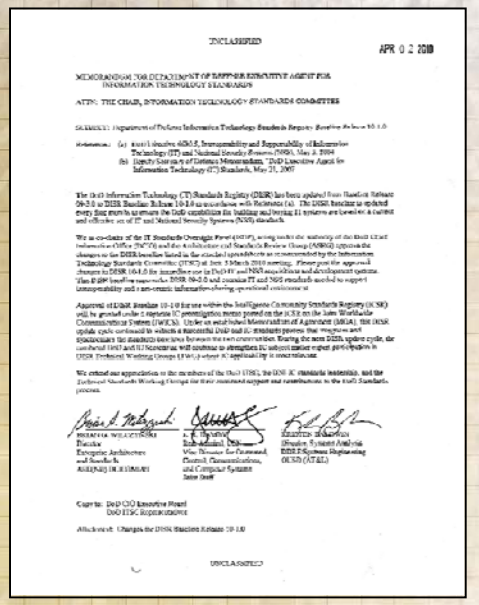
Technical Architecture Standards



Army Technical Architecture (ATA)

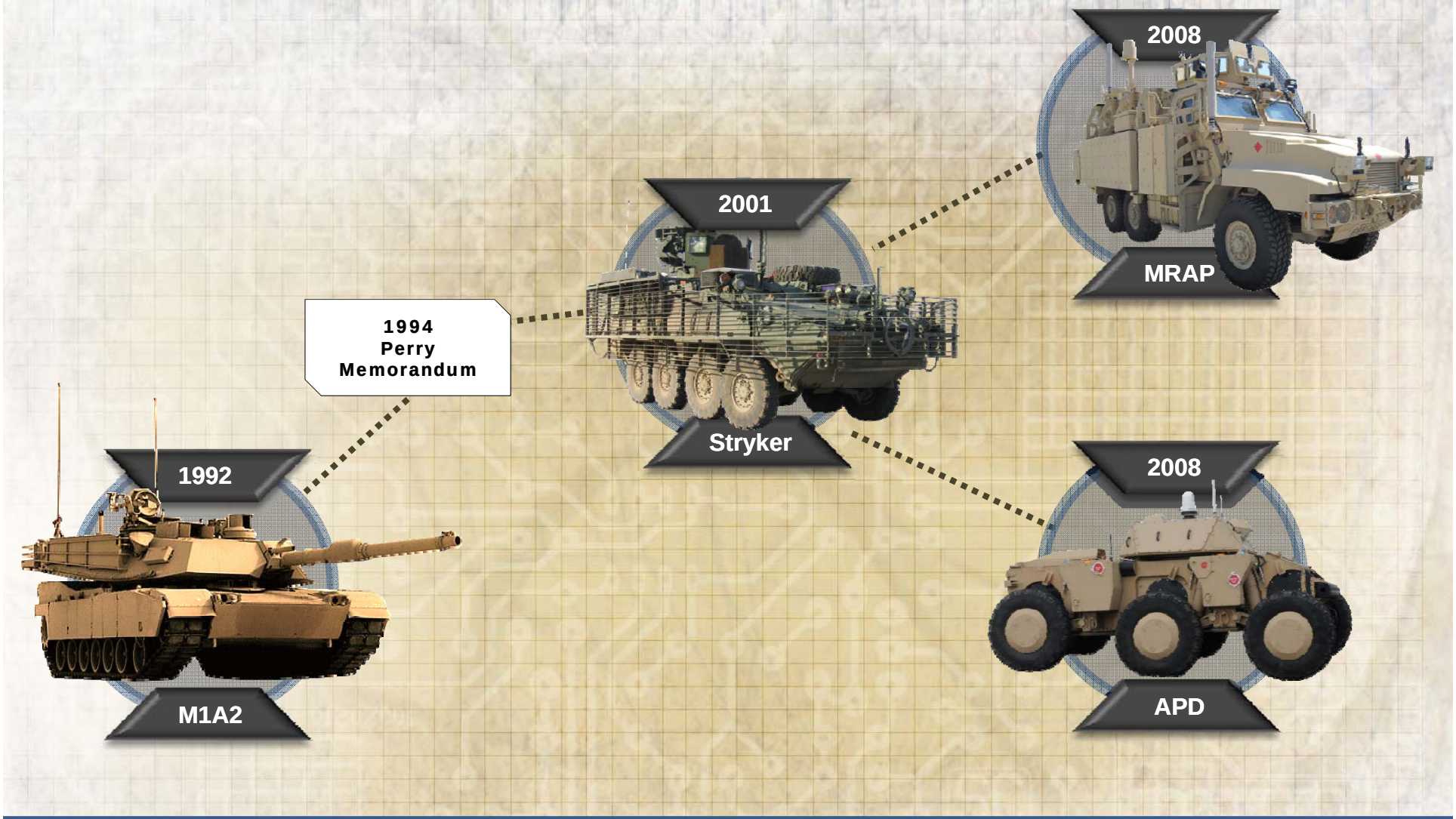


Joint Technical Architecture (JTA)



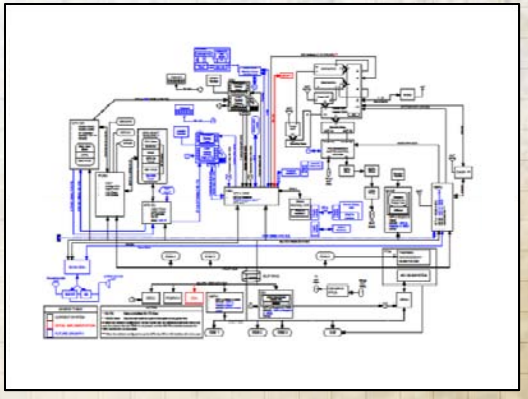
DoD Information Technology Standard (DISR)

Electronics Evolution



The need for increasing Command & Control functionality has driven the need for more COTS.

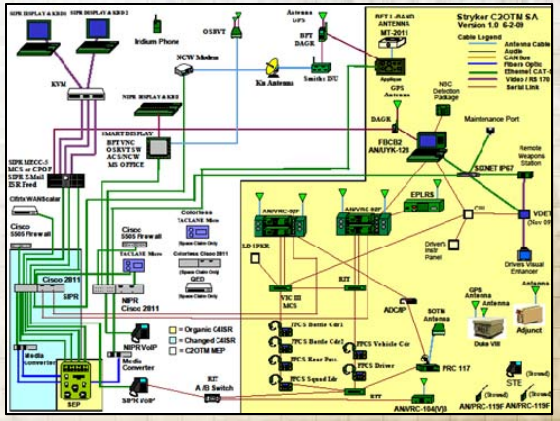
M1A2 Abram's Tank



- **MIL STD 1553-based Architecture**
- **SINCGARS Radios**
- **Digital Command, Control and Communications Capability**
- **Max Speed -** 42 mph (Governed)
- **Power / Weight Ratio -** 21.6 hp/ton
- **Vertical Obstacle -** 42 in
- **Ground Clearance** - 19 in
- **Gross Vehicle Weight** - 69.54 ton
- **Overall Length (Gun Forward)** - 387 in
- **Overall Width -** 144 in

1553 tightly coupled bus schedule

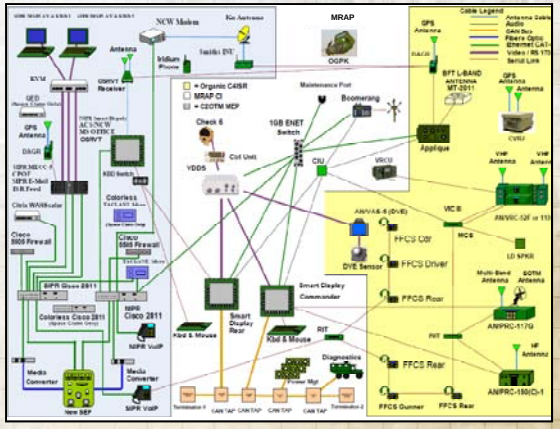
Stryker C2OTM



- **Ethernet**
- **Enhanced Position Location and Reporting System (EPLRS) Radios**
- **Extensive COTS Integration**
- **Max Speed -** 62 mph
- **Max Trench Crossing -** 6.5 ft
- **Gross Vehicle Weight -** 18.12 ton
- **Overall Length -** 275 in
- **Overall Width -** 107 in

First use of Ethernet as an interface to C2 systems

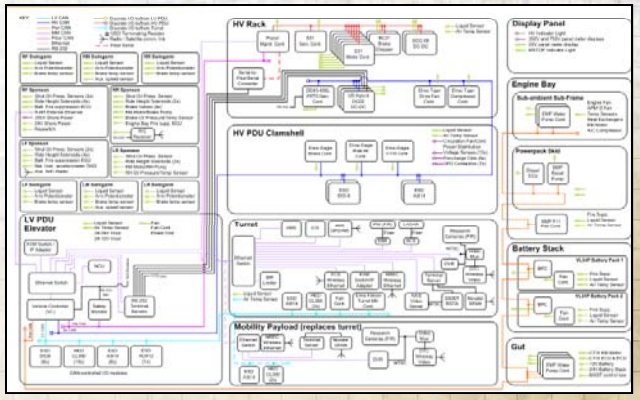
MRAP

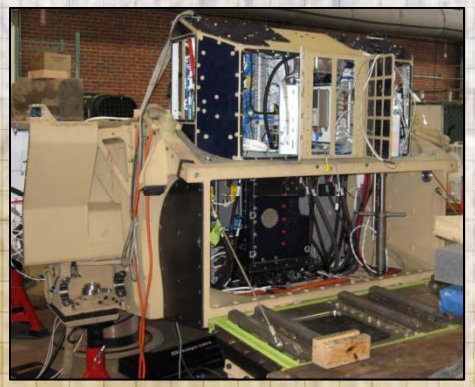


- **Ethernet Backbone**
- **Data Radios and Satellite Communications**
- **19” COTS Smart Displays**
- **Max Speed -** 65 mph (Governed)
- **Gross Vehicle Weight -** 23 ton
- **Overall Length -** 257 in
- **Overall Width -** 102 in

Extensive use of Ethernet & COTS equipment

Autonomous Platform Demonstrator (APD)



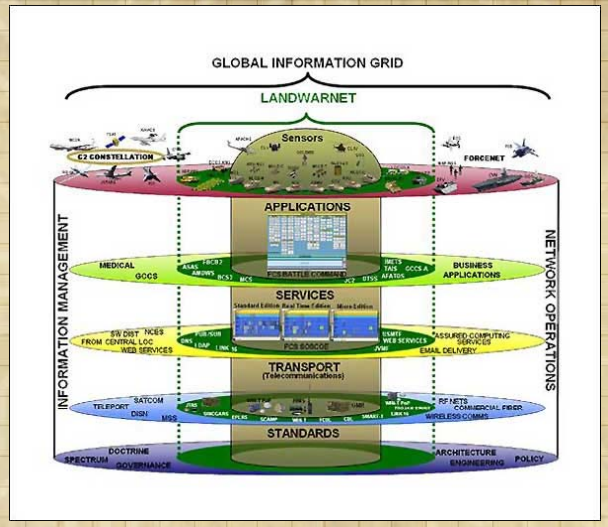


- **Multiple CAN Busses & Gigabit Ethernet (GbE)**
- **COTS Data Radios – 802.11 Based**
- **Extensive COTS Components**
- **Max Speed -** 50 mph
- **Generator Output -** 197 hp
- **Battery Energy -** 21.8 kW-hr
- **Battery Max Power -** 282 hp
- **Power / Weight Ratio -** 112 hp/ton
- **Peak Torque -** 41,368 ft-lb
- **Vertical Obstacle -** 39 in
- **Trench -** 39 in
- **Fording -** 20 in
- **Gross Vehicle Weight -** 9.3 ton
- **Overall Length -** 182 in
- **Overall Width -** 98 in

Multiple CAN busses & Gigabit Ethernet as vehicle backbone

Future Trends

- Vehicle backbones will be based on 10 Gigabit Ethernet (GbE).
- Increase use of software Application Programming Interfaces (APIs).
- Need for increased radio throughput (10 megabyte/sec).
- Global Information Grid



We need to get Ethernet level throughput via radio networks if we want to get truly connected.